Assignment -4 Publish iot data to Watson

Date	17/11/22
Student Name	Catherine Devakiruba .P
Student Roll Number	311419106006
Maximum marks	2 marks

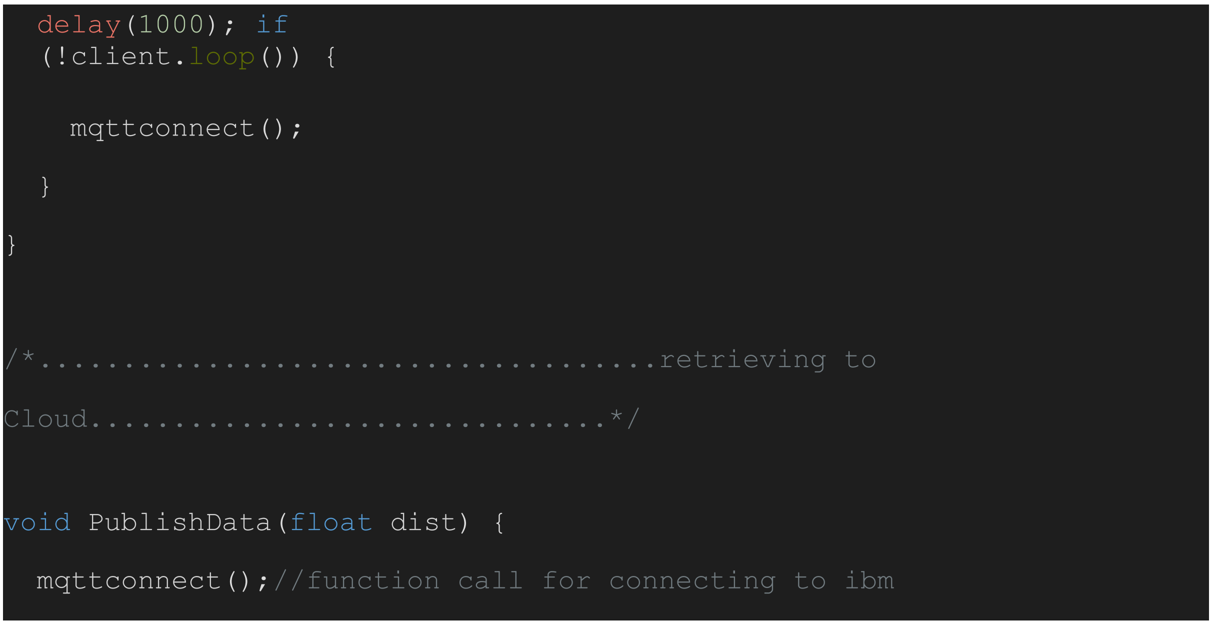
Question-1:

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less 100 cms send “alert” to ibm cloud and display in device recent events.

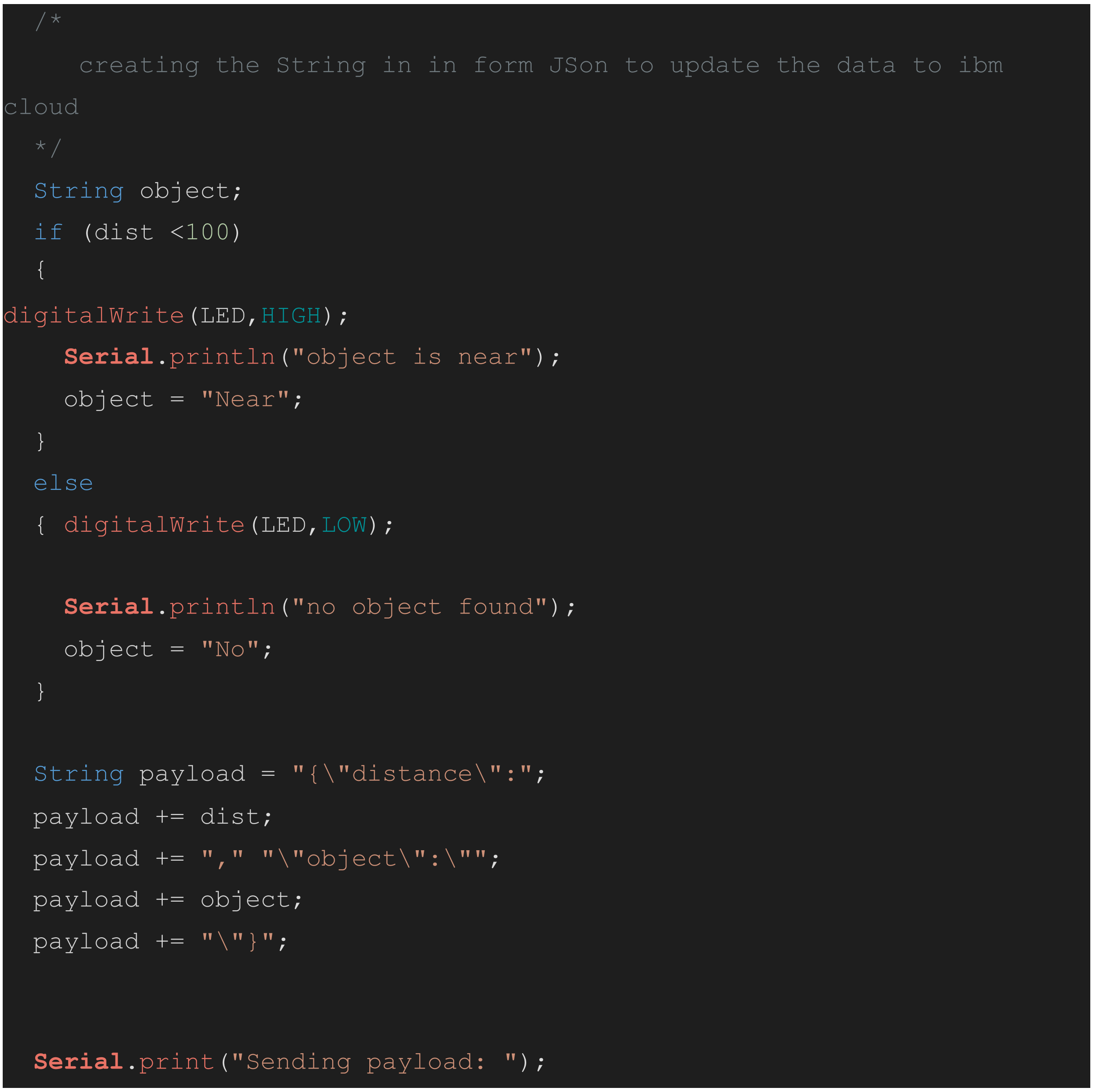
```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt


void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);

//-------credentials of IBM Accounts------/

#define ORG "hncvxb"
#define DEVICE_TYPE "cathedev16"
#define DEVICE_ID "cathedevid"//Device ID mentioned in ibm watson IOT
Platform
#define TOKEN "a)KmVX5M+AcAYhhZXM"     //Token
String data3;
float dist;

//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";//
Server Name
char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type
of event perform and format in which data to be send
char subscribetopic[] = "iot-2/cmd/test/fmt/String";// cmd  REPRESENT
command type AND COMMAND IS TEST OF FORMAT STRING

char authMethod[] = "use-token-auth";// authentication method
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id
```

Program:

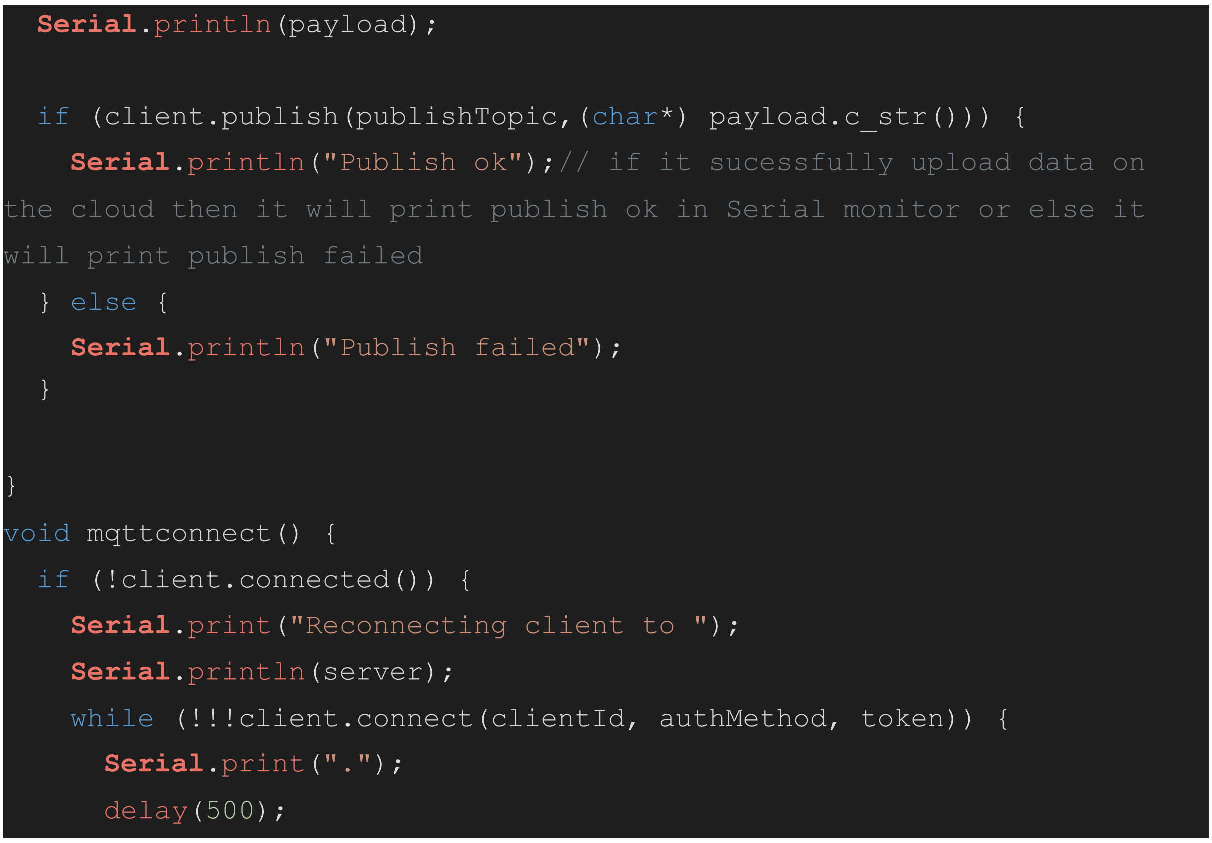
```
//-----------------------------------------
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined client id by passing parameter like server id,portand wificredential


int LED = 15;
int trig = 13;
int echo = 12;
void setup()
{
Serial.begin(115200);
pinMode(trig,OUTPUT);
pinMode(echo,INPUT);

pinMode(LED, OUTPUT);
delay(10);
wificonnect();
mqttconnect();
}
void loop()
{


 digitalWrite(trig,LOW);
  digitalWrite(trig,HIGH);
  delayMicroseconds(10);
  digitalWrite(trig,LOW);
  float dur = pulseIn(echo,HIGH);
  float dist = (dur * 0.0343)/2;

  Serial.print ("Distance in cm");
  Serial.println(dist);



  PublishData(dist);
```



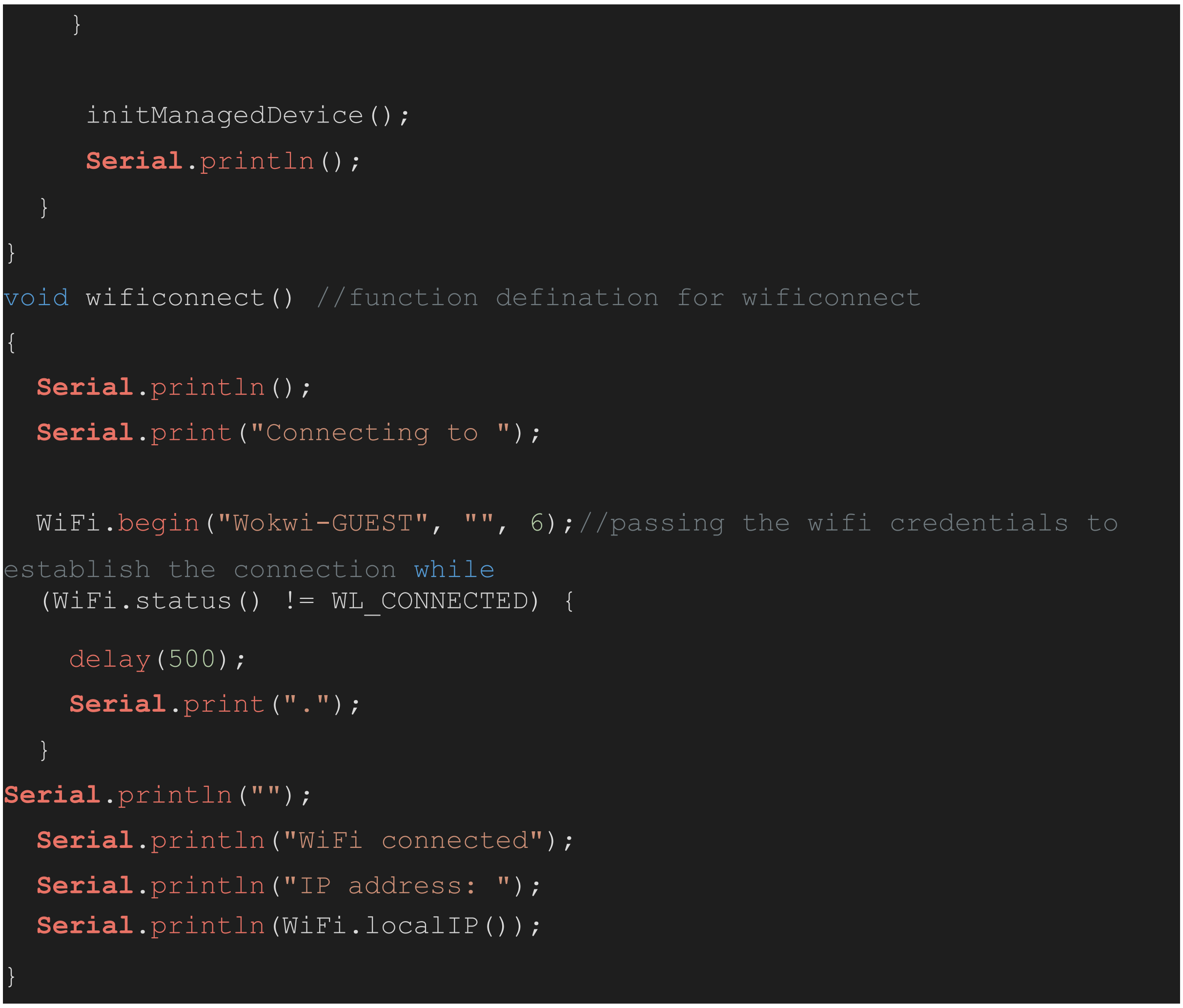
```
  delay(1000); if
  (!client.loop()) {

    mqttconnect();

  }

}


/*....................................retrieving to

Cloud..............................*/


void PublishData(float dist) {

  mqttconnect();//function call for connecting to ibm
```



```
  /*
     creating the String in in form JSon to update the data to ibm
cloud
  */
  String object;
  if (dist <100)
  {
digitalWrite(LED,HIGH);
    Serial.println("object is near");
    object = "Near";
  }
  else
  { digitalWrite(LED,LOW);

    Serial.println("no object found");
    object = "No";
  }

  String payload = "{\"distance\":";
  payload += dist;
  payload += "," "\"object\":\"";
  payload += object;
  payload += "\"}";


  Serial.print("Sending payload: ");
```



```
  Serial.println(payload);

  if (client.publish(publishTopic,(char*) payload.c_str())) {
    Serial.println("Publish ok");// if it sucessfully upload data on
the cloud then it will print publish ok in Serial monitor or else it
will print publish failed
  } else {
    Serial.println("Publish failed");
  }


}
void mqttconnect() {
  if (!client.connected()) {
    Serial.print("Reconnecting client to ");
    Serial.println(server);
    while (!!!client.connect(clientId, authMethod, token)) {
      Serial.print(".");
      delay(500);
```



```
    }

     initManagedDevice();
     Serial.println();
  }
}
void wificonnect() //function defination for wificonnect
{
  Serial.println();
  Serial.print("Connecting to ");

  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to
establish the connection while
  (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());
}
```

```
void initManagedDevice() {
  if (client.subscribe(subscribetopic)) {
    Serial.println((subscribetopic));
    Serial.println("subscribe to cmd OK");
  } else {
    Serial.println("subscribe to cmd FAILED");
  }
}

void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength)
{


  Serial.print("callback invoked for topic: ");
  Serial.println(subscribetopic);
  for (int i = 0; i < payloadLength; i++) {
    //Serial.print((char)payload[i]);
    data3 += (char)payload[i];
  }
 //   Serial.println("data: "+ data3);
//    if(data3=="Near")
```

```
//    {
// Serial.println(data3);
// digitalWrite(LED,HIGH);


//    }


//    else
//    {
// Serial.println(data3);
// digitalWrite(LED,LOW);


//    }
data3="";
```

```
}
```